

# Compression Anastomosis in Rectal Cancers

Rajasenthil Viswanathan<sup>1\*</sup> and Ravi Annamalai<sup>2</sup>

<sup>1</sup>Assistant Professor, General Surgery, Sri Ramachandra University, Chennai; rajasenthilv@yahoo.in

<sup>2</sup>Professor of General Surgery & Medical Director, Sri Ramachandra University, Chennai-600116; draravi2k@yahoo.com

## Abstract

A case of low anterior resection for carcinoma rectum is presented for the compression anastomosis done using compression anastomotic ring (CAR). The compression anastomosis has low leak rate compared to staplers. CAR is made up of nitinol - metal alloy of nickel and titanium (1). A 43 year old female was on neo- adjuvant chemo -radiotherapy for lower one third rectal carcinoma, underwent low anterior resection with compression anastomosis and a proximal diversion ileostomy.

**Keywords:** Nitinol, Compression Anastomotic Ring (CAR), Anterior Resection.

## 1. Case Report

A 43 year old female came as outpatient, presented with complaints of 4 months of bleeding per rectum and 3 months of, painful defecation on diabetic treatment. On examination per abdomen:

Soft, borborygmi present

Per Rectum: mass palpable 7 cm from the anal verge

Blood investigations and chest x-ray: were normal

CT Abdomen: mid rectal growth

T4b N2b Mx - circumferential margin positive

Patient underwent 3 cycles of neo adjuvant chemo-radiation and was posted for anterior resection with CAR (Figure 1) and a diversion ileostomy. The patency of the anastomosis was checked with a air leak test during the procedure.

Post operative period was uneventful. The compression anastomotic ring was removed after 3 weeks during rectal examination (2). Ileostomy closure was done after chemotherapy.

## 2. Discussion

CAR is made up of Nitinol - metal alloy of nickel and titanium, used in medical industry for metallic stents, pro-tapers, niti wires (3,4). Nitinol [Niti] was manufactured at

naval ordnance factory in 1958. Niti alloy has two unique properties, temperature dependent shape memory and super-elasticity. It expands and flexes its shape when cooled, but attains its original size and shape at normal temperature (5,6). Since the leak rates are 1.9%–4% (7) compared to 10.3% in other techniques, CAR is effectively used in anterior resection after neo adjuvant therapy (8). The reduced leak rates are attributed to viable bowel wall layers preserved in CAR, not punctured as in stapling devices. The foreign body reaction to staplers is reduced (9). The intra-luminal diameter at the site of anastomosis is maintained in compression anastomosis, in comparison to stapling. The use of CAR prevents strictures, anastomotic-leak, infections especially after neo adjuvant chemotherapy (10), reduces hospital stay and costs, due to early recovery of bowel movements and by reducing antibiotic requirements (11). CAR is a temporary implant which passes out through the rectum or digitally removed during rectal examination after 3 months (2,12) (Figure 2).

## 3. Conclusion

CAR made up of nitinol is safe, cost effective, feasible device which can be used as an alternative for stapler anastomosis in anterior resection in reducing complications.

\*Corresponding author:

Rajasenthil Viswanathan (rajasenthilv@yahoo.in)



**Figure 1.** Compression Anastomosis Stapling Device.



**Figure 2.** Colon ring.

## 4. References

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